

NEW SPECIES OF VESICOMYIDAE FROM THE GULF OF DARIEN, CARIBBEAN SEA (BIVALVIA; MOLLUSCA)¹

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ABSTRACT

Three new species of the family Vesicomysidae, deep-sea, heterodont bivalves of unusual size, are described from material taken by the R/V PILLSBURY in the Gulf of Darien in the Caribbean Sea. The new species, belonging to three different genera, *Vesicomys*, *Calypsiogena*, and *Ectenogena*, live in depths beyond 400 meters and possess shells that are relatively heavy and of a chalky structure. The possible affinities of the family with the Cyprinidae and Veneridae are discussed.

INTRODUCTION

During the 13-16 July 1966, the R/V JOHN ELLIOTT PILLSBURY of the Institute of Marine Sciences of the University of Miami made a number of deep-water trawling stations in the Gulf of Darien, off Colombia in the Caribbean Sea. At four of the stations, all below 400 m, several specimens of the rare family of deep-sea clams, Vesicomysidae, were obtained, including three previously undescribed species.

Dall & Simpson (1901) established the family Vesicomysidae (originally spelled Vesicomysacidae). Reviews and lists of species have appeared (Lamy, 1920; Odhner, 1960), but the status of the family is moot. Thiele (1935) and Clarke (1962) placed *Vesicomys* in the Kellyellidae. Okutani (1966) allocated related genera to the Cyprinidae and Jukes-Browne (1913) hinted at a relationship to the Veneridae, while others have maintained the family separately (Dall, 1908; Woodring, 1938; Newell, 1965).

Since the members of this group inhabit deep water, they have usually been collected by deep-sea expeditions. Species have been recorded or described from the CHALLENGER (Smith, 1885), the BLAKE (Dall, 1886), the BELGICA (Pelseneer, 1903), the INVESTIGATOR (Smith, 1906), the ALBATROSS (Dall, 1908), the VALDIVIA (Thiele & Jaekel, 1931), the SIBOGA (Prashad, 1932), the VITYAZ (Filatova, 1961), and the SOYO-MARU (Okutani, 1962).

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STATUS OF VESICOMYIDAE

The generic and familial placement of the species described herein and the status of the family Vesicomylidae may be questioned; I am preparing a more extensive study of the species presently referred to the family along with some anatomical notes. Although distinguished by their dehiscent periostracum, posteriorly sinuous pallial line, chalky shell and more or less deep-sea habitat, the species of Vesicomylidae share a number of characters with members of the Veneridae. Once considered in the Isocardiaceae (Thiele, 1935), some genera placed in the Vesicomylidae nevertheless exhibit affinities to the Cyprinidae. In fact, Okutani (1966) recently relegated *Calyptogena* and *Akebiconcha* to that family, though *Calyptogena* was introduced into the Carditidae (Dall, 1891) and subsequently placed in the Vesicomylidae (Woodring, 1938). Using a detailed analysis of the dentition, Casey (1952) suggested that cyprinoids and veneroids are closely related and that the cyprinoid hinge comprised the root form of the veneroid condition. Nicol (1951) has also suggested that the cyprinids are actually veneroid in their relationships. The sole living species of the Cyprinidae, *Arctica islandica* (Linnaeus), though long rather distantly segregated from the Veneridae, differs only in regard to the presence of a large and developed posterior lateral tooth, the strong, brown, distinctive periostracum, and the lack of a pallial sinus. The latter trait is typical of groups already considered venerids, e.g., the Circinae. Furthermore, *Arctica* has small siphons with muscular thickenings of the posterior portion of the mantle (Saleuddin, 1964).

Two of the new species described here, *Calyptogena ponderosa* and *Vesicomyla cordata*, were dredged alive. Preliminary anatomical investigations show that these species share a number of morphological characters of systematic importance. Both species, for example, have a large, laterally compressed and anteriorly pointed foot, with a concomitant extensive ventral pedal gape. Each possesses small incurrent and excurrent siphonal openings with associated posterior thickenings of the mantle muscles. The gill, which is not plicate and apparently homorhabdic, is remarkably similar

in each species and consists of a large ventrally directed inner demibranch and a dorsal, smaller, outer demibranch. Both demibranches have descending and reflected lamellae. The ctenidia are large—the dorsal portion of the outer demibranch extends into the umbonal cavity—and thick or tumid. In section, the gills resemble those of *Vesicomys stearnsii* as illustrated by Ridewood (1903). The labial palps are reduced to extremely small folds or lips which border the mouth. The combination of these anatomical traits with the conchological ones involving the periostracum, ligament, dentition, shell substance, and configuration of the pallial line serve to circumscribe the limits of the family Vesicomysidae.

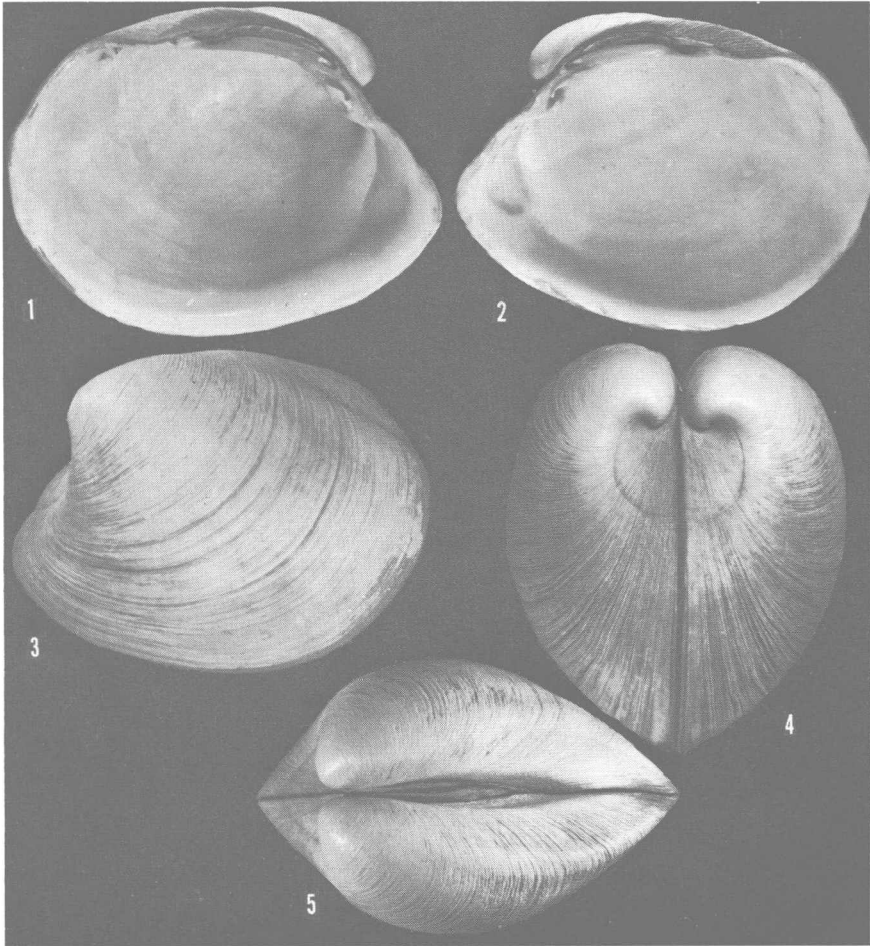
***Vesicomys cordata*, sp. nov.**

Figs. 1-8

Holotype.—Department of Mollusks, Museum of Comparative Zoology, No. 256974.

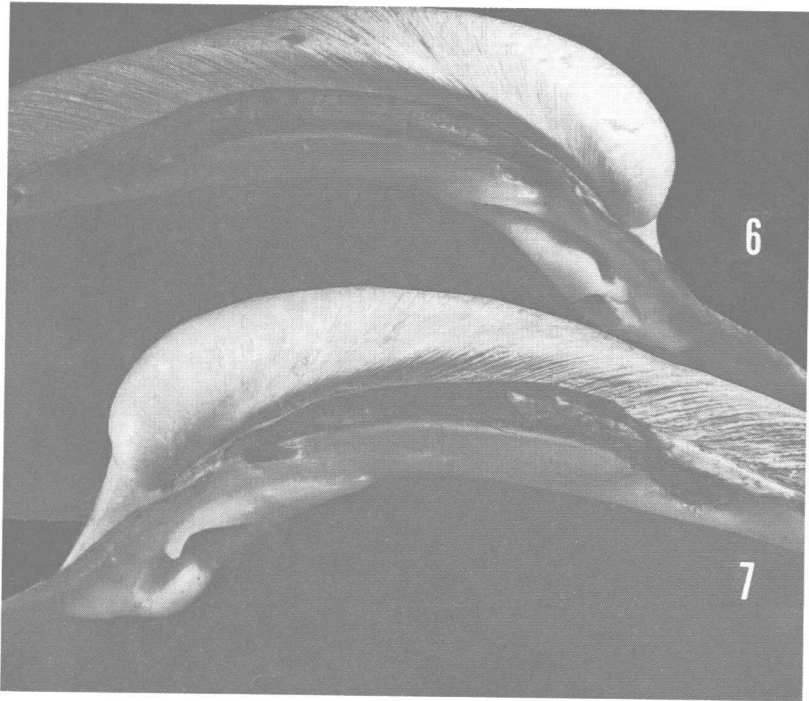
Type-locality.—R/V PILLSBURY station 394, 9°28.6'N, 76°26.3'W, Golfo del Darien, 66 miles NNE of Punta Caribana, Colombia, in 421-641 meters.

Description.—Shell extending to 63 mm in length and to 47 mm in height, subtrigonal, inequilateral, equivalve, rather solid, globosely inflated with both valves of equal convexity (Figs. 4 and 5). Umbos far anterior, small, pointed, strongly involute; umbonal cavity deep; beak strongly inflated. Anterior outline pointed, narrowly convex and short; ventral margin gently convex, broadly coextensive with rounded, convex posterior margin; anterior dorsal margin short, straight to slightly convex and demarcated ventrally by strongly incised isocardioform line of lunule; posterior dorsal margin elongate, gently convex and arcuate. Sculpture consisting of poorly defined irregular concentric lirations, strongest and most crowded along anterior ventral portion of disk; possible annual growth rings evident; no true radial sculpture. Weak posterior ridges emanating from beaks, paralleled by weak radial sulcations. Escutcheon deep with steep walls, elongate and lanceolate. Ligament opisthodontic, brownish, sublanceolate, broader posteriorly, deeply sunken into escutcheon, occupying over one-half of the area of floor of escutcheon. Viewed in sagittal section, ligament subsigmoid posteriorly, arched anteriorly, subtended by well-developed nymphal callosities. Lunule cardioform, well developed with incised isocardioform lines. Right valve with two irregular cardinal teeth beneath umbo (Fig. 7); dorsalmost tooth arcuate and pointed ventrally and elongately arcuate dorsally; ventralmost tooth protuberant and pointed; socket between cardinal teeth. Left valve (Fig. 6) socketed to accept cardinal teeth of right valve; posterior dorsal cardinal tooth arcuate; central cardinal tooth bluntly pointed; no true internal ribs present but posterior margin of anterior



FIGURES 1-5. The holotype of *Vesicomya cordata*, MCZ 256974 (length = 62.2 mm): 1, internal view of the left valve; 2, internal view of the right valve; 3, external view of the left valve; 4, anterior view of complete specimen; 5, dorsal view of complete specimen.

adductor muscle strongly thickened. Anterior adductor muscle scar irregularly subtriangular and pointed dorsally; posterior adductor muscle scar irregularly ovate and pointed dorsally. Pallial line arcuate, weakly impressed and slightly sinuate posteriorly to form poorly defined pallial sinus (Fig. 8). Shell dirty yellowish white; periostracum dehiscent; sometimes stained externally with ferruginous orange-yellow.

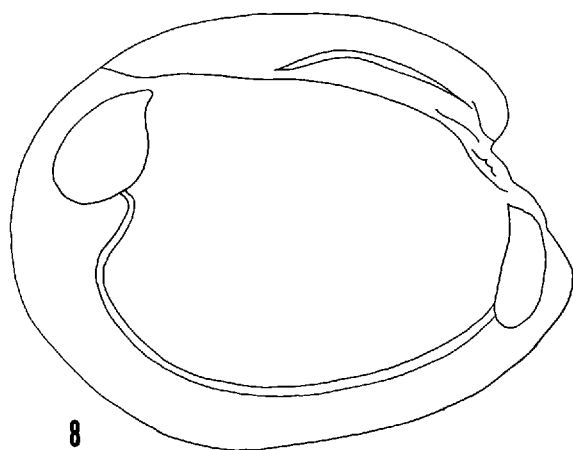


FIGURES 6-7. The holotype of *Vesicomys cordata*, enlargement of the hinge line: 6, the left valve (area shown = 38 mm); 7, the right valve (area shown = 38 mm).

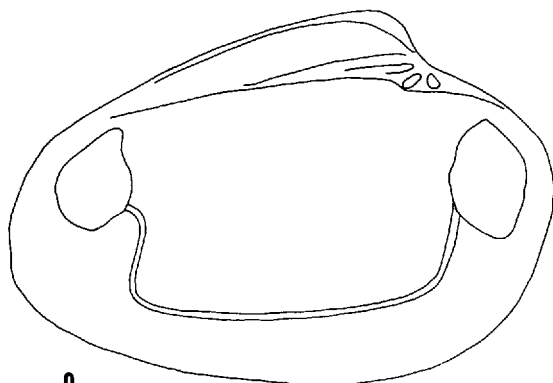
Length (mm)	Height (mm)	Width (mm)	Remarks
62.2	46.7	38.2	Holotype
23.5	17.3	12.3	Paratype (MCZ 256975)

Remarks.—*Vesicomys cordata* is remarkably similar, and probably most closely related, to *V. ticaonica* Dall 1908, from ALBATROSS I station 5215, 12°31'30"N, 123°35'24"E, about 230 miles southeast of Manila, between Ticao and Masbate in the Philippine Islands, at 600 fathoms. The presence of the isocardioform line and a developed lunule as well as the involute umbos and configuration of the dentition and pallial sinus are characters very similar in both species. However, *V. ticaonica* is not as globosely inflated, has a yellowish-brown periostracum, and lacks a strongly developed, deep escutcheon.

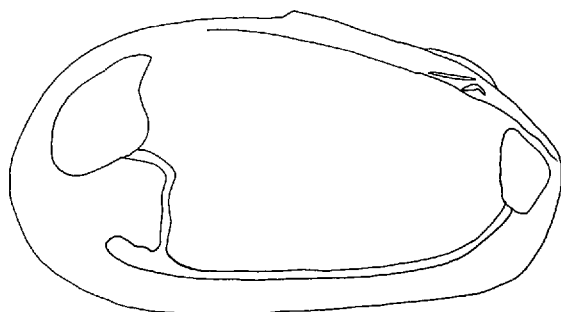
V. cordata is tentatively assigned to the nominate subgenus *Vesicomys*, with *Callocardia atlantica* Smith, 1885, designated as type-species by Dall (1886); the latter is a poorly known species of small size but its dentition,



8



9



10

FIGURES 8-10. Diagrammatic illustrations of the internal view of the left valve of: 8, *Vesicomya cordata*; 9, *Calyptogena ponderosa*; 10, *Ectenagena modioliforma*.

isocardioform line and rounded outline are much like those of *V. cordata*. A fossil genus, *Waisiuconcha*, based on *W. alberdinae* Beets, 1943, from the upper Oligocene of Waisiu, Buton Island, off the southeast peninsula of Celebes, Indonesia, also belongs here and is a precursor, if not a synonym, of *V. ticaonica*.

V. caribbea Boss, 1967, has dentition similar to *V. cordata*, although the teeth in *caribbea* are blunt and invested with periostracum. However, the deeply inset ligament and conspicuous lunule of *cordata* easily distinguish it.

Specimens Examined.—PILLSBURY station 374, 9°57'N, 76°10.6'W, Golfo del Darien, 47 miles SW of Cartagena, Colombia, in 377-439 m (broken right valve). PILLSBURY station 394, type-locality (2 complete specimens, living).

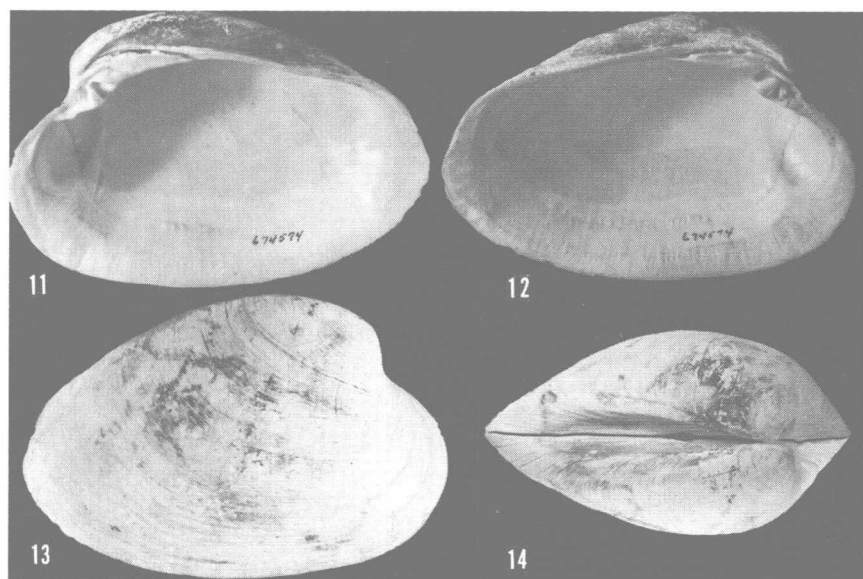
***Calyptogena ponderosa*, sp. nov.**

Figs. 9, 11-15, 18

Holotype.—Division of Mollusks, U. S. National Museum, No. 674574.

Type-locality.—M/V OREGON I station 1426, 29°07'N, 87°54'W, about 77 miles south of Mobile Bay, Gulf of Mexico, in 600 fathoms (1,097 m).

Description.—Shell extending to 114 mm in length and to 76 mm in height, elliptical to subovate, inequilateral, equivalve, heavy and solid, rather inflated with both valves of more or less equal convexity (Fig. 14). Umbos far anterior, slightly elevated, rather inflated, small and pointed, involute; umbonal cavities deep; beak inflated. Anterior margin broadly and smoothly rounded; ventral margin more or less straight to slightly convex and rising somewhat behind; anterior dorsal margin straight to slightly concave, short and steeply descending; posterior dorsal margin elongate, nearly straight and gently descending; posterior margin broadly and irregularly convex or rounded. Sculpture consisting of irregular, concentric lirations, rather fine, concentrated in various annual growth rings, becoming stronger on anterior ventral surfaces of both valves; no true radial sculpture. Posterior ridges emanating from beak; shallow sulcus between posterior ridges. Escutcheon elongate, lanceolate and deeply excavated. Ligament black or dark brown, strong, deeply inset and short, occupying about one-fourth to one-third of escutcheon. Calcareous portion of ligament well developed and subtended by raised nymphal callosities. Right valve with two cardinal teeth beneath umbo; dorsalmost broad and thickened; ventralmost narrow and somewhat pointed (Fig. 15). Left valve with two subumbonal cardinal teeth; posteriormost larger, subdeltoïd, and pointed; anteriormost smaller, moderately thickened, and subdeltoïd. Posterior cardinal tooth consisting of narrow crease subtending nymphal callosity (Fig. 18). No true internal rib; rib-like structure or thickening present



FIGURES 11-14. The holotype of *Calyptogena ponderosa*, USNM 674574 (length = 93 mm): 11, internal view of the right valve; 12, internal view of the left valve; 13, external view of the right valve; 14, dorsal view of complete specimen.

posteriorly or posterior to anterior adductor muscle scar. Anterior adductor muscle scar strongly impressed and irregularly rounded; posterior adductor muscle scar also irregularly rounded but more weakly impressed. Pallial line weakly convex and sinuate posteriorly to form shallow irregular pallial sinus (Fig. 9). Internal surface of valves with closely spaced, weakly developed radial vermiculations. Shell substance chalky; predominately white, sometimes stained centrally with ferruginous yellow; anterior ventral margins darkened with grayish coloration; periostracum obsolete.

Length (mm)	Height (mm)	Width (mm)	Remarks
113.3	74.2	—	PILLSBURY station 394, (left valve only)
100.6	68.6	48.9	PILLSBURY station 364
93.0	60.6	48.9	Holotype
85.9	58.9	39.6	PILLSBURY station 364
62.0	44.7	27.8	PILLSBURY station 364
56.1	42.6	23.6	PILLSBURY station 364
42.8	30.6	17.3	PILLSBURY station 364

Remarks.—*Calyptogena ponderosa* is remarkable for its large size and unusual heaviness. An individual valve may be from 2.5 to 7.0 mm in

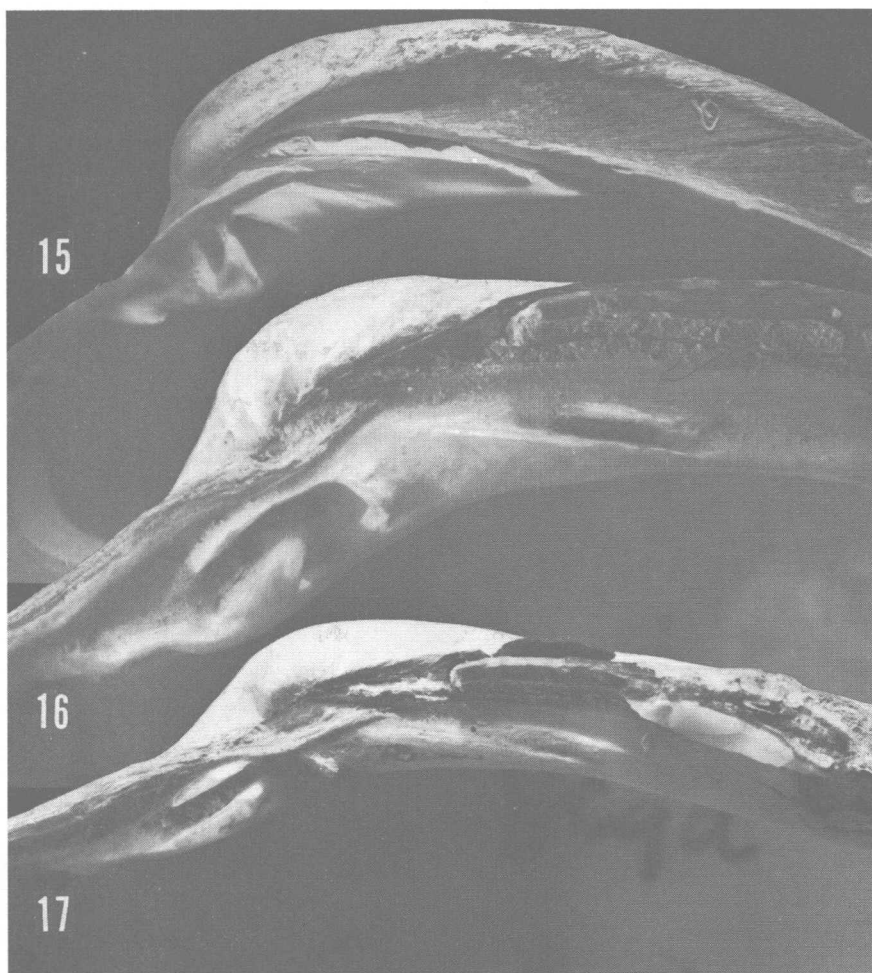
thickness and weigh up to 70 grams. *Vesicomys gigas* Dall of the eastern Pacific may be nearly as large or heavy, but it is easily distinguished by its protuberant ligament, short, raised nymphal callosity and lack of a developed posterior radial ridge.

Allometric differences occur in *C. ponderosa*. Small immature individuals have a more rounded outline than large adults, which tend to be somewhat more elongate. Smaller individuals also are somewhat less tumid, having a height/width ratio of from 1.5 to 1.8, while the largest adults fall between 1.2 to 1.4.

Recently, the familial relationships of *Calyptogena* have been discussed by Okutani (1966); he concluded that the genera *Calyptogena* and *Akebiconcha* belong to a group of Cenozoic cyprinids. He even noted that *Archivesica* and *Vesicomys* were similar to these large cyprinids conchologically. Though the familial placement of these enigmatic genera may be contested, *Calyptogena* and *Akebiconcha* should not be treated separately. The dentition of the type-species of these genera, respectively *pacifica* Dall and *kawamurai* Kuroda, are remarkably similar and not, in my opinion, worthy of generic splitting.

Calyptogena was originally introduced into the family Carditidae by Dall (1891). Numerous subsequent authors followed this arrangement but in 1938 Woodring, without an explicit statement for doing so, referred the group to the Vesicomysidae. He also discussed the nature of the dentition of the species which represented *Calyptogena* and established two new genera upon species closely related to *C. pacifica*. These were *Ectenagena* with *Calyptogena elongata* Dall, 1916, as type and *Phreagena* with *P. lasia* Woodring, 1938, as type. Subsequently he has indicated that *Phreagena* should be considered a synonym of *Calyptogena* (Winterer & Durham, 1962; Woodring, pers. com.).

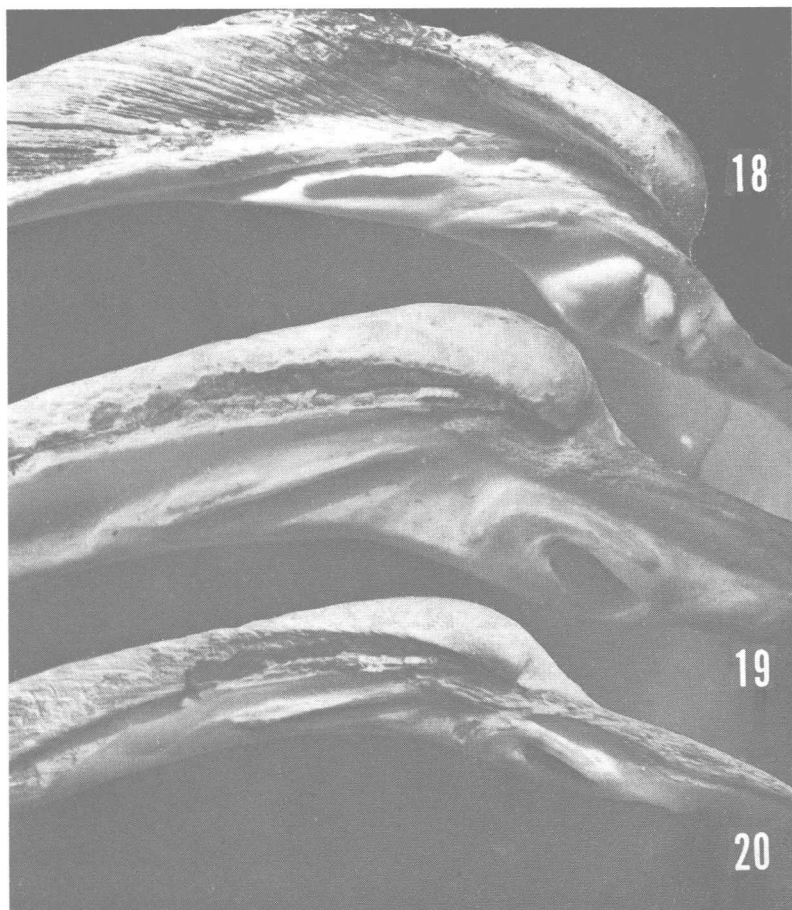
Dall's original placement of *Calyptogena pacifica* in the Carditidae may well have been based on the resemblance of the hinge structure of *Calyptogena pacifica* and *Cardita affinis* Sowerby from the west coast of Mexico. Certainly the configuration of the cardinal teeth in both these species is similar, but upon closer examination it appears to be of a superficial nature. *Cardita* has a distinctly bilobed and protuberant subumbonal cardinal tooth, whereas in *Calyptogena* the heavy subumbonal cardinal is merely blunt, not bifid, and anteriorly coextensive with the anterior cardinal tooth which parallels the hinge line. Distal lateral dental elements are evident in *Cardita* but lacking in *Calyptogena*. Probably the most important characteristic which indicates that *Calyptogena* is not of carditid affinities is the general structure of the shell. The strong radial sculpture, ventral crenulations, polished interior, and brownish coloration of the carditids are traits totally dissimilar to the chalky, ponderous, smooth, and whitish valves of *Calyptogena*. In addition, many carditids are byssate and live in shallow



FIGURES 15-17. The dentition of the right valve of: 15, *Calyptogena ponderosa* (holotype, USNM 674574, length = 93 mm, area shown = 45 mm); 16, *Calyptogena pacifica* (syntype, USNM 122549, length = 30.5 mm, area shown = 8.5 mm); 17, *C. pacifica* (syntype, USNM 122549, length = 47.5 mm, area shown = 18.5 mm). Note ontogenetic differences in the growth stages of *C. pacifica*.

water; *Calyptogena* does not have a byssus—at least in the adult condition—and inhabits deep water.

Calyptogena ponderosa is closely allied to *C. pacifica* of the eastern Pacific. Both species have heavy chalky shells, weakly sinuate pallial lines,



FIGURES 18-20. The dentition of the left valve of: 18, *Calyptogena ponderosa* (holotype, USNM 674574, length = 93 mm, area shown = 45 mm); 19, *Calyptogena pacifica* (syntype, USNM 122549, length = 30.5 mm, area shown = 8.5 mm); 20, *C. pacifica* (syntype, USNM 122549, length = 47.5 mm, area shown = 18.5 mm). Note ontogenetic differences in the growth stages of *C. pacifica*.

as well as similar hinge and dental structures. Figures 16-17 and 19-20 show the ontogenetic changes in the dentition in *C. pacifica*. In young or small individuals, the subumbonal cardinal teeth are more heavily thickened (Figs. 16 and 19). In adult specimens the anterior extension of the dorsal-most right cardinal nearly parallels the hinge line and forms an almost completely differentiated structure (Fig. 17). This particular tooth is

absent in *ponderosa*, and the remaining teeth are much more strongly developed. The left subumbonal cardinal element of *ponderosa* (Fig. 18) has developed into two distinct dental processes which are closely juxtaposed to each other while the homologous dentition in *pacifica* (Figs. 19-20) is fused into a skewed inverted U-shaped structure.

Vesicomya valdiviae Thiele & Jaeckel, 1931, from VALDIVIA station 33, about 140 miles off Morro Garnet, Rio de Oro, West Africa, in 2,500 m ($24^{\circ}35.3'N$, $17^{\circ}4.7'W$) and station 103, about 72 miles south of Knysna, Republic of South Africa, in 500 m ($35^{\circ}10.5'S$, $23^{\circ}2'E$) should be assigned to *Calyptogena* since it is extremely closely related to *C. pacifica*, more so than to *C. ponderosa*. The only trait that might serve to separate *pacifica* from *valdiviae* is the outline of the shell: in *valdiviae* the ventral margin is distinctly convex. From *ponderosa*, *valdiviae* differs in its smaller size, the presence of an anterior extension of the dorsalmost right cardinal tooth, and the shape of the subumbonal cardinal teeth in the left valve.

Specimens Examined.—OREGON I station 1426, type-locality. PILLSBURY station 364, $9^{\circ}28.7'N$, $76^{\circ}34.3'W$, Golfo del Darien, 63 miles NNE of Punta Caribana, Colombia, in 933-961 m. PILLSBURY station 394, $9^{\circ}28.6'N$, $76^{\circ}26.3'W$, Golfo del Darien, 66 miles NNE of Punta Caribana, Colombia, in 421-641 m. PILLSBURY station 391, $10^{\circ}03.0'N$, $76^{\circ}27.0'W$, Golfo del Darien, 69 miles SSW of Cartagena, Colombia, in 1,417-1,767 m.

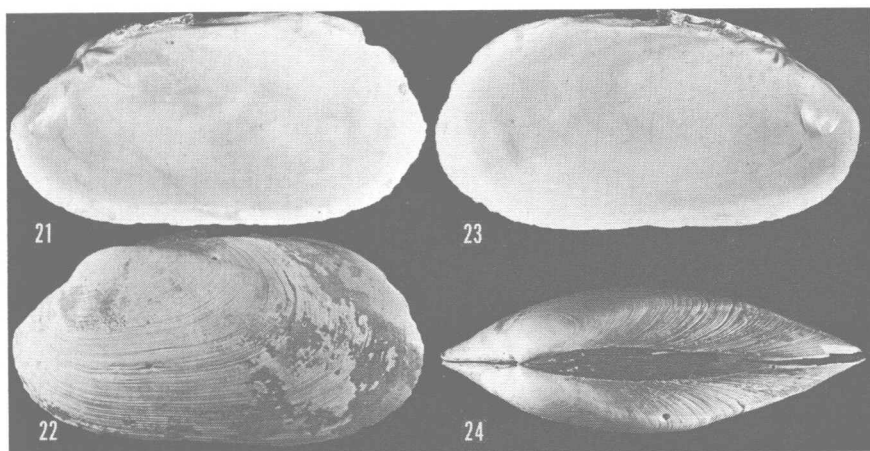
***Ectenagena modioliforma*, sp. nov.**

Figs. 10, 21-24, 26-27

Holotype.—Department of Mollusks, Museum of Comparative Zoology, No. 256973.

Type-locality.—R/V PILLSBURY station 394, $9^{\circ}28.6'N$, $76^{\circ}26.3'W$, Golfo del Darien, 66 miles NNE of Punta Caribana, Colombia, in 421-641 meters.

Description.—Shell 97.3 mm long, 55 mm high, 30.8 mm wide, elongate, subelliptical, nearly modioliform, inequilateral, equivalve, subsolid, fragile, inflated centrally, compressed posteriorly with both valves of equal convexity, with slight, narrow anterior gape and without noticeable posterior flexure (Fig. 24). Umbos anterior, not conspicuous, low, hardly elevated above the hinge line, prosocline, weakly involute; umbonal cavity relatively small and deep. Anterior margin irregularly and oblately convex; anterior dorsal margin short, straight, obliquely inclined, sharply angular in its intersection with anterior margin; ventral margin extensive, nearly straight but with extremely weak central concavity, rising convexly behind; posterior dorsal margin elongate and nearly straight; posterior margin broadly convex and irregularly rounded. Sculpture consisting of slight,



FIGURES 21-24. The holotype of *Ectenagena modioliforma*, MCZ 256973 (length = 97.3 mm): 21, internal view of the right valve; 22, external view of the left valve; 23, internal view of the left valve; 24, dorsal view of complete specimen.

raised concentric lirations (about 12 per cm), most evident on central disc peripherally. Posterior radial ridge, very weak, and semisulcate dorsally. Ligament strong, consisting of extremely thin external organic element and of thickened internal calcareous element subtended by raised thickened hinge line or nymphal callosity, black, protuberant, elongate, lanceolate and not definitively inset basally; thin posterior periostracal portion of ligament developed. No true lunule or isocardioform line present (in left valve, irregular concave excavation present just anterior to umbo). Hinge dentition well developed, not invested with periostracum and smooth; hinge plate narrow, thickened, and extending far posteriorly. Right valve with two divergent subumbonal cardinal teeth; posterior tooth slightly irregular and with two distinct blunt points; anterior tooth short, single, subdeltoid and blunt (Fig. 26). Left valve with three subumbonal cardinal teeth; posterior tooth elongate, oblique, and laminate; anterior two teeth short, bluntly pointed, angularly divergent and dorsally coextensive (Fig. 27). No true internal radial rib, but rib-like thickening present on postero-dorsal margin of anterior adductor muscle scar. Muscle scars irregularly impressed. Anterior adductor strongly impressed, irregularly subtrigonal; posterior adductor scar large, irregularly rounded, and weakly impressed; anterior pedal retractor scar, immediately dorsal to anterior adductor scar, very deeply impressed and irregularly angular. Pallial line ventrally more or less straight, rising anteriorly; pallial sinus irregular, shallow, complete, sharply angular immediately ventral to posterior adductor and forming



FIGURES 25-26. The right hinge of: 25, *Ectenagena elongata* (holotype, USNM 110774, length = 43.0 mm, area shown = 10 mm); 26, *Ectenagena modioliforma* (holotype, MCZ 256973, length = 97.3 mm, area shown = 33 mm).

short, broad confluence posterior with pallial line (Fig. 10). Internal surface of valve with radial vermiculations, particularly evident along pallial line. Shell basically dull white, covered externally with brownish-yellow, dehiscent periostracum. Internally dull, except for shining muscle impressions.

Remarks.—This species is placed in *Ectenagena* because it bears a great resemblance to, and is probably an analog of, *Calyptogena elongata* Dall, 1916, from the eastern Pacific, the type-species of *Ectenagena* Woodring, 1938. (See also “Remarks” under *Calyptogena ponderosa*.)

Unfortunately, *E. modioliforma* is known only from the holotype, but no other recognized species in the Caribbean–western Atlantic area should be confused with it or its closest relative, *E. elongata*, from which it differs in being vastly larger but less narrowly elongate. More importantly, the



FIGURES 27-28. The left hinge of: 27, *Ectenagena modioliforma* (holotype, MCZ 256973, length = 97.3 mm, area shown = 33 mm); 28, *Ectenagena elongata* (holotype, USNM 110774, length = 43.0 mm, area shown = 10 mm).

cardinal dentition, though similar in both species, shows some specific differences. In *elongata* the left posterior and dorsalmost subumbonal cardinal tooth is short and laminate (Fig. 28). In *modioliforma*, the homologous teeth are, respectively, blunt, relatively more extensive and thickened (Fig. 27). The right cardinal teeth of both species are extremely similar, except that in *modioliforma* they are thicker and the sockets are larger and deeper (Fig. 26).

In general outline, *E. modioliforma* is not unlike *V. longa* Thiele & Jaeckel, 1931, from VALDIVIA station 33, about 140 miles off Morro Garnet, Rio de Oro, West Africa in 2,500 m (24°35.3'N, 17°4.7'W) and station 63, west of Campo, Cameroon, Bight of Biafra, Gulf of Guinea, in 2,492 m (2°N, 8°4.3'E) but *V. longa* has no pallial sinus. In addition, *longa* has a more rounded, shorter posterior margin, an umbo which is more inflated, and a ventral margin that is regularly convex and not even weakly or centrally concave. The dentition of the right valve of *modioliforma* with its two divergent teeth is unlike the thin, lamellate cardinal teeth of *longa* which nearly parallel the hinge margin.

Vesicomya gigas Dall from the eastern Pacific, though similar to *V. modioliforma*, is easily separated by its great tumidity. The dentition in *gigas* is relatively weaker and thinner than that of *modioliforma*. An anterior subumbonal extension of the posterior cardinal tooth is developed, though weakly, in *gigas* but not in *modioliforma*. A notable feature of *modioliforma* is the very deeply set anterior pedal retractor scar; such a development of this scar does not occur, even in thickly shelled specimens of *V. gigas*.

Specimens Examined.—Known only from the holotype.

SUMARIO

NUEVAS ESPECIES DE VESICOMYIDAE DEL GOLFO DE DARIEN, MAR CARIBE (BIVALVIA; MOLLUSCA)

Se describen tres nuevas especies de la familia Vesicomylidae, bivalvos heterodontos de aguas profundas, de tamaño poco usual, procedentes del material tomado por el buque PILLSBURY en el Golfo de Darién en el Mar Caribe. Las nuevas especies, pertenecientes a tres géneros diferentes: *Vesicomya*, *Calyptogena* y *Ectenagena*, viven en profundidades de más de 400 m y poseen conchas relativamente pesadas y con estructura como de yeso. Se discuten las posibles afinidades de la familia con Cyprinidae y Veneridae.

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